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Vol 5 No 9

4U Rock Road

Commodore set to launch 512K Amiga in Europe

In this issue
SPECIAL SUPPLEMENT
COMMODORE AMIGA



Special Amiga supplement reprinted courtesy of Commodore Horizons magazine

IT NOW appears that Commodore's much heralded Amiga micro will be launched in Europe as an upgraded version of the 256K machine currently available in the US. The European Amiga looks set to be offered as a 512K, twin disc drive system. In the States, it is sold as a 256K single disc micro, with the extra memory and second disc available separately.

"We will probably sell it as a system in Europe rather than as components as in the US, and it will probably be offered with 512K of memory," said Gail Wellington, Commodore's European software manager.

Commodore is currently gearing up for the Amiga's European launch on March 5 – in Frankfurt Opera House, West Germany – which will be an event similar to the Amiga's flamboyant launch in the US. Commodore also plans a large stand at Cebit, the computer exhibition running concurrently with the Hannover Fair, one of Europe's premier exhibitions, which runs from March 12-19.

Unfortunately for the consumer, this configuration places the Amiga fairly and squarely in the business market – the price is now going to be around, £1,500, although an exact cost has not yet been fixed. But certainly the Amiga is to be sold in computer specialist shops and to OEMs (original equipment manufacturers) rather than in the high street.

The software which Commodore plans to announce

continued on page 4 ▶

THIS WEEK'S NEWS

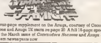
- Infocom adventures to become more widely available
- Modem approval delays anger manufacturers
- British Telecom's software influence expands

INSIDE ❯ DON'T MISS THE SPECIAL AMIGA SUPPLEMENT ❯


The Standard by which others will be judged.
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Vol 5 No 9



Popular a four-page supplement on the Amiga, courtesy of Commodore Horizons and Amiga UK starts on page 20. A full 16-page special appears in the March issue of *Commodore Horizons and Amiga UK*, available from newsagents now

EDITORIAL

The present system for the approval of modems – and for that matter all telecommunications equipment – is pleasing no-one. Delays, costs and the complicated bureaucracy involved is infuriating the modem manufacturers. The head of BABT, John Vevers, agrees that changes are needed, and he has ideas for those changes. However, since BABT simply carries out instructions laid down by the BSI and the DTI, any proposals need to be approved before they can be implemented.

What is not in dispute is that telecommunications equipment must be rigorously tested for safety. Neither is it being disputed that the current procedure is unwieldy.

For the consumer, the modem market is a minefield. You can buy unapproved modems which are widely available, but you cannot legally link them to the telephone network. One such is Le Modem, which comes with a free three month subscription to Micronet, which, theoretically, you cannot take advantage of as yet. Even more ironically, Micronet itself is partly owned by British Telecom – hardly the company one would expect to endorse unapproved equipment in this way.

Certainly the consumer should not be presented with a choice where the most technologically advanced modems are mainly as yet deemed unsafe to use.

But a number of the companies concerned are seriously worried about the prospect of insolvency if they cannot generate cash flow by selling the modems as they wait three to four months for the finished product to be tested.

There has recently been much competitive wrangling and ill feeling between modem manufacturers. Now is the time for them to get together and press for a simpler and quicker alternative to the present system – but an alternative that does not skimp on the safety aspect. Everyone agrees there is room for improvement, and they should be able to come up with at least a part solution.

Editor Christina Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Advertisement manager** Diane Holyoak **Advertisement executive** David Osen **Classified executive** Jon Beales **Administration** Geraldine Smyth **Managing editor** Peter Worlock **Publishing director** Jenny Ireland. **Published by** Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2H 7PP Tel 01-437 4343 Telex 296275 **Typeset by** Publishers Reprographics Services Ltd, 4 Roger Street, London WC1 **Printed by** Greenaway Harrison, Sutton Road, Southend-on-sea, Essex. **Distributed by** S M Distribution, London SW9 Tel 01 274 8611 Telex 261643

ABC

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Computer Trade Association Magazine of the Year

Activision acquires adventurers Infocom

IN a surprise move, Activision has reached a $7.5 million (about £5.3m) agreement to acquire Infocom, the American company highly regarded for its text adventures, such as the *Zork* trilogy, *Hitchhikers' Guide to the Galaxy* and *Suspended*.

The agreement is still subject to the approval of the board of directors of each company and their respective shareholders, but it will mean that Infocom's adventures will become much more widely available in this country, through Activision UK.

It should also mean that Activision should be able to reduce the price for the UK market. Import versions of Infocom products are at present around £35.

Activision UK's managing director Hugh Rees-Parcell said, "We're very excited about this deal and obviously we're now working on marketing plans for the range. We intend to be very aggressive with the Infocom software – we've all had a great admiration for their product for a long time."

Activision US is currently looking to acquire a number of companies. It is now one of the strongest software development firms in the US.

This year, it has already bought the American software house Gamestar, from which Activision UK licensed Barry *McGuigan's World Championship Boxing*.

```
WITH A TERRIBLE GRINDING OF GEARS THE
BULLDOZER COMES TO AN ABRUPT HALT JUST
IN FRONT OF YOU. IT SHAKES, SHUDDERS
AND EMITS NOXIOUS SUBSTANCES ALL OVER
YOUR ROSE BED. PROSSER IS INCOHERENT
WITH RAGE.

MOMENTS LATER, YOUR FRIEND FORD PREFECT
ARRIVES. HE HARDLY SEEMS TO NOTICE YOUR
PREDICAMENT, BUT KEEPS GLANCING
NERVOUSLY AT THE SKY. HE SAYS "HELLO,
ARTHUR." TAKES A TOWEL FROM HIS BATTERED
LEATHER SATCHEL, AND OFFERS IT TO YOU.

>TAKE TOWEL
AS YOU TAKE IT, FORD SAYS "ER, LOOK,
THANKS FOR LENDING ME THE TOWEL. BEEN
NICE KNOWING YOU. GOT TO GO NOW." HE
SMILES COOLLY AND WALKS DOWN THE COUNTRY
LANE

>
```

British Telecom takes on Odin

BRITISH Telecom continues its computing acquisitions by adding Odin Computer Graphics to the list of those administered by Telecomsoft.

Odin rose to prominence with games such as *Nodes of Yesod, Arc of Yesod* and *Robin of the Wood*.

Now, although Odin will remain a separate company and keep its Liverpool premises, British Telecom will have exclusive worldwide publishing, distribution and marketing rights for all further titles.

Four new titles are set for launch by BT Odin in the near future: *ICUPS*, *Spartacus* – a gladiatorial simulation, *Liquidator* and *Kimera*.

Firebird's marketing manager, Phil Pratt does not feel any of the BT stable – Firebird, Rainbird, Beyond and now Odin – will come into conflict with each other. "The competition doesn't bother us. Beyond has its own marketing set-up, and Odin will still be separate. Odin just basically needs good distribution and financial security."

Modem firms angry at approval delays

MODEM companies in the UK are becoming increasingly frustrated at the amount of time it takes to get modems approved for use by the British Approvals Board for Telecommunications (BABT).

They claim that the BABT's bureaucratic practice and time taken to test the equipment is holding the procedure up to the extent that the modems are out of date by the time they reach the market. Some are now releasing unapproved modems for sale, which must have a red triangle to indicate their non approved status.

It is not illegal to sell unapproved telecomms equipment, but is against the law for the buyer to connect such equipment to the telephone network. The BABT was set up at the request of the present government specifically to carry out approvals tests, its quality and safety standards having been drawn up by the British Standards Institute and designated by the Secretary of State.

"One tries to get the process speeded up, but it is against the most unbelievable bureaucracy," said Nazir Jessa of Watford Electronics, whose Le Modem product has been sent to BABT and is, he believes, three months away from approval. "The industry moves so fast, that by the time it is approved, we will have a new and better modem ready." Le Modem is currently on sale, but its red triangle, says Jessa, is seriously affecting sales.

Barry Krite of Datastar Systems agrees. "Our factory has sent our Magic Modem in for approval, and unless it gets through soon, the factory will have to close."

And Keith Rose of Modem House says, "The delays are spoiling British industry. By the time a modem has been approved, it's six months out of date."

For the BABT, John Vevers, who set the approvals board up said, "We have to work to the standards and regulations laid down for us, and we must operate in accordance with government policy. We have had difficulties in recruiting professional engineers because of a national shortage. I would like more engineers and I would like to provide a speedier service but it's not easy.

"Every application is date-stamped when it reaches us and is dealt with strictly in order of arrival. We have to send the equipment out to the labs for tests, and we also have to visit the factory to check that it is up to standard.

"There's only one way to do it in a matter of days; that's by rubber-stamping the applications, which is not safe."

Vevers added that he hoped some improvements to the current system could be made. "I shall be making a series of formal proposals to working groups to try to change the system," he said. "These changes are designed to reduce costs, but the ultimate decision is the DTI's."

Commodore's 512K Amiga

◄ continued from page 1

and demonstrate at Frankfurt on March 5, will include both US and European originated software, with the emphasis on business and utility packages, although many American companies are planning entertainment software.

From Britain, Precision, best known for its *Superwrite* and *Superbase* applications for the Commodore 64, is working on conversions, Visa will produce *Visawrite*; Torus is implementing its *Acquisition* database, and ICL is developing a graphics kernel system. A number of other companies are also converting PC software.

More products for Protext series from Arnor

OWNERS of Arnor's *Protext* word processor for the Amstrad machines will shortly have the chance to buy two new complementary titles from Arnor.

The first, *Prospell*, is a spelling checker designed for use with *Protext*. It comprises an English spelling dictionary of 30,000 words, with the facility for the user to add 20,000 more. The dictionary can be edited or listed, and will check files at a rate of 2000 words per minute. The user can also find words with wild cards, and anagrams.

Prospell can be used with other word processors such as *Tasword*, *Amsword* and *New Word*. On disc it will cost £24.95, on Eprom – with the dictionary on disc – £34.95.

The second title is *Promerge Plus*, which is a mail merge program to be used from within *Protext*. Its features include direct printing from disc without losing the file in memory, cut and paste abilities, and simultaneous printing of a text file and word processing.

Promerge Plus will cost £24.95 on disc and £34.95 on Eprom. Details from Arnor at The Studio, Ledbury Place, Croydon, Surrey CR0 1ET (01-688 6223).

Opus upgrades Challenger for free

THE Challenger disc drive for the BBC series now comes with 512K as standard. The original 5¼ inch drive comprised a double density interface and 256K solid state Ram disc, with an extra 256K as a £50 optional purchase.

Opus's sales director John Harris claims that over a third of all orders wanted the upgrade, so the company has decided to include it with the machine.

The price, however, remains at £249.95.

Opus is also keen to reassure potential buyers that the Challenger is compatible with the new BBC Master series of micros.

Opus can be contacted at 55 Ormside Way, Holmethorpe Industrial Estate, Redhill, Surrey (0737-65080).

Music linker system from Joreth

JORETH Music has produced a Linker system to run with its Music Composer package on the Commodore 64.

The real time Linker system has sophisticated looping features, such as the facility to record while loops are playing, create sub-loops – up to 128 in eight tracks – within parts of the real time system, and nest subloops with directed *Goto* commands.

The Linker can be used as a stand alone package as well as within the Music Composer.

The Linker costs £44.95 at present, but Joreth is currently reviewing all its retail prices.

Details from Joreth Music, PO Box 20, Evesham WR11 5EG (0386 831915).

Atari ST comms

KUMA has announced a software communications package for the Atari 520 ST, running under the Gem operating system.

The *K-Comm* package will cost £49.95 and will be launched next month. Details from Kuma at 12 Horseshoe Park, Pangbourne, Berks (07357 4335).

Argus joins the police

ARGUS'S latest release in its Mind Games range is *The Force*, a simulation of the everyday life of a police superintendent.

It costs £9.95 for the Spectrum and Commodore 64 machines.

DTI gives a million for schools modems

THE Department of Trade and Industry is to spend £1 million on modems for middle and secondary schools.

The idea is to give the schools Tandata 512 and Dacom 2123 AD models with a particular view to accessing the DTI's own database Neris (National Educational Resource Information Service) which is to be set up later this year.

Software for Prestel and The Times Schools network is also to be provided separately by those companies concerned.

"We are guaranteeing a modem for every secondary and middle school in the country," said a DTI spokesman.

"Any that are left over will go to independent schools and teachers training centres."

Maxwell buys software distributor

ROBERT Maxwell has made further inroads into the home computer market, after pulling out of the deal to buy Sinclair Research last summer.

Maxwell's Mirror Group (Holdings) has bought the software distribution firm Micro Dealer UK for £790,000. Micro Dealer was formerly part of the Spectrum photographic franchise group.

Letters

Elite editor

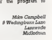
Here are the corrections which should be made to the *Elite* Editor program (Vol 4 No 45)

1 Line 3150 is too long and will be ignored unless the PRINT statement is abbreviated to '?'

2 The machine code Save data and the Galaxies data are in the wrong sequence and consequently are read in the wrong order Simply place the machine code Save data at the end of the listing

That is all that needs to be done for the program to work

Mike Campbell
9 Wedingburn Lane
Lasswade
Midlothian



ST comments

I write to thank Jeff Naylor for his fair, accurate and perceptive review of *1st Word* for the Atari ST However, there are a few items mentioned in the article that require further comment

First, the decision to replace Gem *Write* with *1st Word* was made by Atari USA Our product is bundled with the ST worldwide, not just in the UK Second, the maximum document size increases to around 150 pages of A4 on a 520ST with a Rommed operating system, and although editing a single file of this size is probably bad WP practice, the extra Ram enables up to four documents of over 30 pages to be edited at once

Third, any problems and "untidy ends" mentioned in the review or reported by users will be sorted out in a new version of *1st Word* to be released soon This version will be made available to users via their ST dealers

Your readers may also be interested to know that Atari will also be marketing (as a separate product) an enhanced version of the word processor called *1st Word+*. This will include mail merge, a spelling checker and the ability to paste-in graphics

Chris Scheybeler
Product Development Manager
GST Holdings Ltd

Half price

I'd like to point out that the modem price is not £100 but only half that – £52 49, including a quarter's basic subscription to Compunet (plus p & p). And our telephone number has changed to 01-965 8866

Jane Firbank
Editor
Computer Teleservices Ltd

Corrections

Session Developments, producers of the *Amsdoc* utility which was glowingly previewed in last week's issue, has asked us to point out that the price given – £12 95 – applies to the tape version. *Amsdoc* is available on disc at £14.95.

In the Charts page last week we incorrectly gave Beyond as the producers of the Atari version of *Spy vs Spy 2*. An understandably miffed Databyte points out that the program is theirs. Interested parties can contact them at 15 Wolsey Mews, Kentish

Printer to QL

In the hope of saving someone else from a few hours of desperate experimenting with a soldering-iron, I have some tips on interfacing the Centronics GLP printer to the QL, and monochrome monitor problems

In the QL Serial to RS-232c cable, the wires/pins (in the RS-232c plug) should be set as follows, Blue – 20, Red – 5, Green – 3 White – 2, Black – 1, Orange – disconnect (cut off) The dip switches should be set as follows (looking at the printer from the rear, and working from left to right) Left block – On, Off, Off, Off, Off, Off, Off, Off Right block – Off, On, On, On On, Off, Off, On. The cable should be in Serial port 1

Contrary to what the printer manual says, the left block is block 2 On these settings the printer works perfectly with *Quill*, so I assume it will with the other Psion programs Listings can be output with *"OPEN # channel, SER1' list # channel"*. Make sure 'channel is 3 or over

The 3-pin to phono cable supplied for a monochrome monitor is wired incorrectly too At the 3-pin end, unsolder the white (furthest from the locating lug) cable and re-solder it to the opposite (unused) pin This alters the signal from PAL to composite

It may also interest readers considering the QL, that it can be bought from a major retailer, complete with printer and cable, for £200 The printer offered is a thermal one, but if you pay the extra you should have no problem getting a better one, eg, the Centronics GLP, which has a very good 'near letter quality' mode

Mike O'Donnell
Runcorn
Cheshire

Title screens

I have just come across the fact that it is very simple to make animated title screens using *DLAN* and save them to video cassette – either to personalise pre-recorded tapes to increase the chance of them returning after being lent, or to title one's own video films.

Having designed the title with chosen animation, and preferably taken a tape or microdrive version, tune the videorecorder to channel 36 for the Spectrum signal, set to record, and play the *DLAN* title Unfortunately, Screen and Border do *not* appear the same colour, but the effect is quite satisfactory

I now have a microdrive program consisting of.

a) Title in large capitals
b) My name in lower case
c) Copyright message to match my name
d) *DLAN*

It is then only a two minute job to change any of the above, including paper and ink, maintaining the spacing by use of Tab

Gerrard Martin
First Street
Harare
Zimbabwe

Vortex review

In the review of the Vortex expansion board for the Amstrad CPC464 (January 9), I mentioned that it would allow emulation of an Amstrad 6128 Please note that the Rom at present supplied with the board will not do this It should not be too difficult, I would have thought, for Vortex to produce a 6128 emulation program to go with the board

John Mawhood
19a Crealock Street
London SW18

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Code Words

Name: David Levine

Lucasfilms programmer

"I came across my first computer at school. It was a PDP8 mini and I learnt to program using that. The first machine I ever had at home was called an Imsai, it was built from a kit and used a Z80 processor – that was around 1976.

The first professional program I ever wrote was a Unix utility — I was working for a systems software house in Chicago at the time. Around three years ago I started work at Lucasfilms where my job as a computer scientist was to bring state of the art computer applications into the computer games industry.

The first two games I came up with were *Ballblazer* and *Rescue on Fractalus*. They were both created on the Atari – there was a directive not to create convertible games so I think the Commodore 64 versions are definitely inferior.

The idea with both those games was to create a 3D environment that would give the player a real sense of being in an alternative reality. Computer scientists had already developed mathematically produced computer images to a fine state, but the techniques of maths involved had simply never incorporated into games before. Rigorous application is all there is to it, though getting the images to move in real time animation to take fullest advantage of the machine hardware was another problem."

Name: David Levine
Age: 26

Favourite Programs:

There's a few I respect, but few computer games have been any real revelation. I did like *Tempest* in the arcades, though I don't know who the programmer is.

Favourite Machines:

I don't have any machines at home at the moment – I see too much of them at work. If I really liked one of the home machines I'd have it.

I would say that the most design integrity I've found in a computer is the Mac – a really professionally put-together machine.

Softography:

Ballblazer, parts of other games including *Raid on Fractalus*.

Hobbies:

I try to restrict the computing to work time. Outside of that I'm a commercial pilot and I like to teach flying when I have the time.



THIS
IS
THE
YEAR...



Bulletin Boards

This week, it's the turn of the Bulletin Boards, and tips about phoning BBs

By now if you own or have access to a a modem I expect you have phoned quite a few boards If you don't yet have a modem than I'd advise you to keep this issue until you do get one.

A bulletin board is simply a network you can dial up, look at its facilities, chat to other users and so on Because there are so many, with their own characteristics, I have compiled a list which contains the four things that look for mainly in BBs

User friendliness – how easy is it to get to the place you want and how 'polite' is the host computer?

Friendly Sysops (system operators) – On many BBs you have a 'chat mode' where you can type directly to the Sysop who can 'talk back' Most boards have a Sysop who is friendly, doesn't mind a chat and is helpful, and can tell you about their own BBC software hardware, etc

Lots of SIGS (special interest groups) – It's nice to have plenty of SIGs as the more there are the more likely it is that there will be some that you like

Security Levels – I like there to be security levels on BBs On some software the higher the security level, the longer you can log on.

Always log on to your favourite boards at least once a month as some BBs delete you from the disc if you go a month without logging on. When you log on for the first time, you have to type in your name, password, number, etc, and if you get deleted from the disc you have to type all of this again

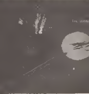
The boards on your list are likely to be different formats (eg, one may be MicroGnome and another TBBS - totally different!) Most of them are likely to be on a long distance phone call as well (unless you live in London where most BBs seem to be located), and different boards have different routes to different pages Waiting and changing page after the previous page has finished being transmitted can cost you quite a few quid that it needn't.

If you can memorise the routes to your favourite pages then go to them directly, since this is less time on the phone and therefore less extra onto your bill. How, you may ask, do I do that? Well, on ITeCs, MicroGnome and all of that kind of board (those that run on CommunITel software – Colour, one page transmitted at a time with the screen cleared first), when you get to a page that you like, memorise its name This is in the top right hand corner

For example, if the page is about Hacking, in the top right hand corner might be written 'HACKINGa' To get to those pages from any other page just type **Hacking#* The 'a' will come up on its own It's a frame letter, a reference to the first page or any page in the section about hacking

On the TBBS, NBBS, etc, it is pretty different. When menus appear, remember the letter you need to get to a section which you like, so that when that same menu next appears (this applies to most software but not all) you can press the same letter before the whole menu has come up

The next tip is about passwords. NEVER use the same password twice! If someone cracks your password on one board and you have used the same word on another then if they log on to that one they can crack your password too easily Also still on passwords use something simple but not your name or an abbreviation of it If someone wants to break in to a BB as someone else who is already a member they often try names as passwords.



Picture courtesy of Compunet

One last thing about passwords Don't use your Prestel/Micronet code number as your password Think of something different. If someone managed to list your password and it was the same as your Prestel/Micronet number then you have just saved them up to £60 by giving them a code number for free

I'd like to try to complete a regular top ten of Bulletin Boards up and down the country Obviously, I'm going to need your help in this, so start phoning round and send me your votes at the address at the bottom of the page To get things kicked off, here's my own personal top ten. If you think it's outrageous, give me your own suggestions.

Picture courtesy of Compunet

		Baud Rate	Number
1	**Micrognome**	1200/75	01-588-8884
2	**Blaslips**	300/300	0843-22637
3	**CCCBB**	300/300	0249-817077
4	**Metrotel**	1200/75	01 941-4285
5	**Marctel**	300/300 & 1200/75	01-346-7150
6	**CBBS – SW**	300/300 & 1200/75	0392-53116
7	**Technomatics**	1200/75	01-450-5764
8	**Vulcan**	300/300 & 1200/75	0628-46881
9	**Dark Crystal**	300/300 & 1200/75	01-854-5647
10	**TBBS – London**	333/333	01-348-9400

Blaslips, at number 2, is a new one, and not such an expensive call for those in the south east! It can be accessed 24 hours a day For those of you who are religiously inclined give Computers for Christ a call on 0395 272611, 300/300 baud, also 24 hours a day

There are also two new boards of the NBBS format. The first is 'MusicTel' and that's a dual baud rate board (in other words it's both 300/300 & 1200/75) You can contact it 24 hours a day, on 01-458-0843

And prepare yourself for the next board – it's called Compost Heap! You can phone it 24 hours a day on 0622-46036 This too is a dual board rate board.

Next week, I'll be looking at one specific area of the boards – SIGs, or Special Interest Groups

David Wallin

If you have any queries, tips or comments to make about any aspect of micro communications, David Wallin would love to hear from you

Write to him at *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 7PP.


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Nice touches

Program *Obsidian* **Micro** Any Amstrad CPC **Price** £7.95 **Supplier** Artic Computing, Main Street, Brandesburton Driffield YO25 8RL

I hope that they are honest enough not to take offence at this, but Artic have been responsible for some of the most spectacularly average conversions to the Amstrad. However, all is forgiven with their new release, *Obsidian* which they are, justifiably, proud of.

It must be said that *Obsidian* breaks no new grounds in its plot design, or indeed in the look of the game It belongs firmly in the honourable tradition of *Project Future*, *Argo Navis* and *Strangeloop* Your space-suited character has to propal himself through the 2D maze of an alien craft, dodging various alien nasties and solving puzzles which really just consist of carrying the right object in the right place

What makes the release special is that there has been a lot of attention paid to the graphics, four colour high-res mode, together with some very nice shading and stippling effects The movement of the aliens is also well defined although hard to get past They follow fixed patterns and you always get snuffed out with the feeling 'I almost did it that time' – one of the essential ingredients for an addictive game

Tony Kendle

Problems

Program *Diskon* **Micro** Any Amstrad CPC **Price** £13.99 **Supplier** Siren Software, 76 Bridge Street, Manchester M3 2RJ

Tape to disc transfer utilities will continue to be big business until software companies come round to realising that Amstrad have sold more home disc systems than anyone else, and that people who have such a marvellous machine will always resent having to mess around with slow loading tapes and a spaghetti of cassette machine wires Siren Software have produced an extraordinarily powerful set of transfer utilities starting with the outstanding Discovery

The second is *Diskon* which will transfer certain problem programs and run them. Notable things it tackles are headerless blocks of code and those programs with machine code headers that can be transferred but, when half loaded, switch the disc drive off and the tape drive on driving you mad with frustration. Protection routines are always getting better and I was disappointed with how much you still could not transfer, but with the exception of Discovery this is probably the best release of its type to date

Tony Kendle

Magicar

Program *Hitchhikers Guide* **Micro** Amstrad 6128/8256 **Price** £24 95 **Supplier** Newstar Software, 22 Middleton Road, Brentwood, Essex

There can be few people who have not heard of the excellent Infocom range of adventures, but until now it was only the lucky owners of American home computers Atari and Commodore, that could get a chance to play them. Thankfully some of them at least are now available for the large memory Amstrad machines running under CP/M+ (and faster than on the Commodore drives I suspect)

Incidentally I have been told that there is no technical reason why they could not have released it on CP/M 2 2 for every Amstrad – the people to complain to, loudly and long, are the importers, Softsel, and not Newstar who are only distributers

Hitchhikers itself is the latest Infocom release to reach the UK, and without a doubt the one with the greatest mass appeal.

Most things you can say about it have already been said: it follows the atmosphere of the books with extraordinary success and the puzzles are solvable as long as you get the hang of the lunatic logic The descriptions are long, verbose, evocative and above all genuinely funny – even Level 9, the masters of text compression, can't match over 110K of text data on disc (which explains the price tag) The responses are intelligent and the way it anticipates your inputs is almost magical.

It's always hard for a game to live up to a reputation as great as this one, but I was enormously entertained – I advise you not to miss it

```
Bridge                                              Score: [illegible]

>inventory
You have:
  no tea
  an atomic vector plotter
  a thing your aunt gave you which you don't know what it is
  your gown (being worn)
  a babel fish (in your ear)
  The Hitchhiker's Guide
  an electronic sub-etha signaling device
  pocket fluff
  a toothbrush
  a flathead screwdriver

"Like my spaceship, Ford?" Zaphod asks. "YOUR spaceship?" says Ford, losing
his cool for a second. "Yeah, I stole it," Zaphod admits. "I'm gonna use it to
find the legendary lost planet of Magrathea. Let's go sit in the sauna while I
explain." Zaphod, Ford, and Trillian all head off to port.

>w
You enter the sauna. After several hours, you come out a changed man.

>

                                                    [illegible]
```

Tony Kendle

Wild card

Program *Mini Office II* **Micro** Amstrad 464/664/6128 **Price** Tape £14 95 Disc £19 95 **Supplier** Database Publications, 68 Chester Road, Hazel Grove, Stockport SK7 5NY

Mini Office II is a suite of six programs consisting of a word processor, database, spreadsheet, graphics, communications, and a label printer You are probably thinking that such a collection of programs for £20 must mean that they are of poor quality Well think again, it's excellent.

The word processor can be operated in either 20, 40, or 80 column mode The screen is divided into two distinct areas The top two lines display such useful information as the number of characters free, the caps lock status, insert or overwrite mode, etc

The word processor is literally overflowing with excellent features. One of these which deserves a mention is the mailmerging facility This allows the program to pull data from a database file and insert it into a document.

The database is very easy to use yet extremely powerful. Each record can contain up to 20 fields of differing lengths and data types, eg, alpha, integer, decimal, etc

Having input all of your valuable data it can then be saved to tape or disc. A search facility, allowing the use of wild cards, will mark any records found which meet the search criteria.

The spreadsheet program is the next little gem When using the maximum column width of 18 characters you can set up a 20x40 spreadsheet and still have memory to spare. This should be more than sufficient for most applications The spreadsheet contains all the features of its expensive counterparts, eg cell duplication, auto recalculate, automatic cursor movement

Having used *Mini Office* for the past few days I cannot praise it too highly

Jon Revis

Brainteaser

Program *Crack It! Towers* **Micro** Spectrum 48K **Price** £8 95 **Supplier** Mirrorsoft Ltd, Headington Hill Hall, Oxford OX3 0BW

Crack It! is a puzzle magazine and this game is based around it Not surprisingly it's full of brainteasers But my mind was working before I even opened the package The words 'for any age' always seem to indicate an uncertainty about the product

The game's idea is quite good. Trying to find the secret of *Crack It! Towers* forces you to investigate a number of rooms collecting keys . . no, it's not another arcade adventure! Instead, every room contains a puzzle and to enter every chamber you'll need some mental arithmetic Succeed in the test and you have the opportunity to win a bonus key in a game of chance But beware – Count Crack It! has various pets who steal keys

It's a neat plot to interlink the puzzles, but it falls apart because of the presentation which is decidedly less than exciting and looks very Basic, and the nature of the games There's too much reliance on mental arithmetic and old chestnuts like hangman

All of this may have been permissible if it was aimed squarely at a young audience who would be amused if slightly less critical Indeed, the presence of a questions customising facility is obviously geared to parents though it's symptomatic of the package that this is directly accessed via the main menu – at least make cheating call for a little brainpower Unhappily too many of the exercises call for good keyboard knowledge and fast reading and response skills

Recently educational software has begun to come of age and Mirrorsoft has played a major part in that improvement It's a surprise to see them producing something like this, with too many memories of the bad old days haunting it!

John Minson

Perfect world

Program *Nine Princes In Amber* **Micro** CBM64 + disc drive **Price** £19 95 **Supplier** Telarium (Input-Specialist Shope)

Hot on the heels of *Perry Mason* comes Telariums latest Adventure of the Book, this time based on Roger Zelazny's Amber series, in which you play the part of Corwin, one of the nine Princes

Awakening in a strange hospital bed you soon realise that somebody is trying to kill you Making a quick escape finds you outside the front door of one of your sisters, when you suddenly, dimly remember that you could never trust her Or the rest of your crazy family back fo where was it? Something like Amber!

That was it! The one true, perfect world, of which all others are imperfect shadows

The main problem is that you have only a vague memory of what has gone before so fighting for the throne will be as complex and tricky a game as you ever hope to play, especially without your memory

To progress anywhere in the adventure you must make alliances with other characters, skilful interaction is essential as this will determine the eventual outcome

Concise documentation is included in the two disc package, with a list of verbs which can be used in the game Graphics are clear, quickly drawn and along with the lengthy text descriptions do give a certain 'feel' to the game

Telarium claim there are 40 possible endings and over 40,000 different game variations, (I'm afraid I'm still trying to find the first ending) so there is plenty of variations in this game

For anyone who has £20 to spare and enjoys good interactive adventures, this game is a must.

Roger Garrett

All in one

Program *Superpower ADM Rom* **Micro** Amstrad CPC 464/664/6128 **Price** £36 95 **Supplier** MicroPower, Northwood House, North Street, Leeds LS7 2AA.

There comes a time in every programmer's life when his thoughts turn to machine code

One suitable tool is the *Superpower* package, which is so large that it is supplied on two separate 16K Eproms

The three utilities – assemblies, disassemblies and monitor – are called via three separate bar commands Bar ASM calls up the assembler program, the screen switches to 80 column mode and the cursor is positioned in the editing window

The assembler's only slight eccentricity is the fact that two-byte addresses cannot be entered directly. An EQU statement must have been used earlier in the program assigning the required address to a label Operating system routines have already been assigned a label and can therefore be called directly

The assembler is extremely fast: Micropower has clocked the program and found it capable of assembling over 24,000 single statement lines per minute

Your source code is assembled using the command Esc A, following which you can save the object code, relocate it to its run address, or execute the code.

The command Esc J will append a new file onto the end of the source code presently in memory This allows you to store oft-used routines as files on disc or tape

Another powerful feature of the assembler is its ability to shuffle blocks of source code around in work processor fashion.

Bar MON calls up the machine code monitor program. The display shows 16 rows of 16 bytes, the contestants of all registers and the status of all flags Pressing the key "Q" will replace this display with a disassembly of the code being examined.

Two pointers are put at your disposal and the block of memory to be displayed is specified using these pointers Having assigned different addresses to each pointer, you can toggle between the two areas of memory by pressing the "↖" key

The code in Ram can be edited by overtyping either the hexadecimal value of the byte or by moving to the Ascii/graphics section of the display and entering text

The final utility is a disassembler which converts any machine code program back into it's original mnemonics The *Superpower* disassembler will disassemble both Ram and Rom The result of the disassembly can be directed to the screen, a printer, or even to disc or tape as a file

The ADM Rom must be a strong contender to become the definitive machine code utility for the Amstrad

Jon Revis



GOOD BYTE

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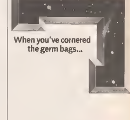
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GREAT ESCAPE

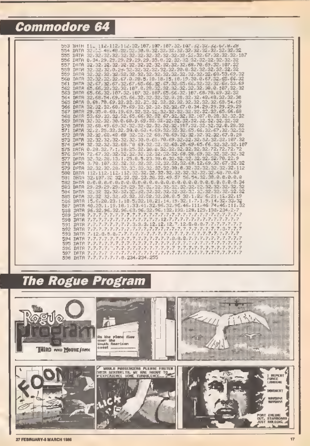
by G Mayhew

This week, the second and final part of the game, Tasra, for the Commodore 64

Can you guide your disc through the innards of your 64?

Will your data get corrupted? Will you be able to find the right port for the joystick control? There's only one way to find out, so get trying.

```
100 FOR AD=49152 TO 51019 READ D T=T+D
110 POKE AD,D NEXT AD
120 IFT<>117612THENPRINT"DATA ERROR" END
130
140 PRINT"JOM PRESS A KEY TO PLAY 'TASRA'"
145 GETK$ IFK$=""THENS=PEEK(53279) GOTO145
150
155 SYS 49315
160
165 END
500 DATA 120,169,13,141,20,3,169,192,141,21,3,88,96,162,0,24,62
501 DATA 0,48,144,0,189,0,48,73,1,157,0,48,232,224,8,208,237,173
502 DATA 0,220,201,126,240,15,201,125,240,24,201,123,240,33,201
503 DATA 119,240,42,76,49,234,173,1,208,201,50,240 3 206,1,208,76
504 DATA 49,234,173,1,208,201,212,240,3,238,1,208,76 49,234,173
505 DATA 0,208,201,25 240,3,206,0,208,76,49,234,173,0,208,201,255
506 DATA 240,3,238,0,208,76,49,234,234,173,31,208,169,216,133,196
507 DATA 169,4,133,252,169,194,133,254,160,0,132,195,160,0,132,251
508 DATA 169,70,133,253,177,253,145,251,170,189,72,196,145,195 208
509 DATA 208,243,230,196,230,252,230,254,165,254,201,198,208,231
510 DATA 96,234,32,244,193,169,45,141,5,220,173,31,208,169,0,141
511 DATA 33,209,169,11,141,32,208,169,29,141,24,208,169,15,141,24
512 DATA 212,169,0,32,210,255,169,34,141,0,208,169,204,141,1,208
513 DATA 32,0,192,32,109,192,169,13,141,248,7,169,1,141,21,208,169
514 DATA 11,141,39,208,234,173,31,208,41,1,201,1,208,7,32,4,193
515 DATA 76,167,193,96,173,0,206,201,255,206,233,32,06,193,76,167
516 DATA 193,120,169,49,141,20,3,169,234,141,21,3,88,173,31,208
517 DATA 169,0,141,4,212,141,0,212,141,6 212,169,12,141,1,212,169
518 DATA 9,141,5,212,169,129,141,4,212,238,44,6,162,50,160,0,238
519 DATA 32,208,173,32,208,73,0,141,32,208,136,208,242,202,208,239
520 DATA 173,44,6,201,51,240,6,169,11,141,32,208,96,32,187,193,96
521 DATA 206,5,220,206 5,220,206,5,220,173,100,5,201,57,208,11,238
522 DATA 99,5,169,48,141,100,5,76,167,193,238,100,5,162,255,160
523 DATA 0,136,208,253,173,32,208,73,10,141,32,208,202,208,242,169
524 DATA 11,141,32,208,169,0,141,4,212,169,2,141,6,212,169,35,141
525 DATA 1,212,169,11,141,5,212,169,17,141,4,212,76,167,193,169
526 DATA 34,141,0,208,169,204,141,1,208,32,0,192,173,31,208,76,231
527 DATA 192,96,234,238,134,2,169,146 32,210,255,169,0,162,11,160
528 DATA 17,32,240,255,169,70,32,210,255,169,73,32,210,255,169,82
529 DATA 32,210,255,169,69,32,210,255,238,32,208,173,0,220,201,111
530 DATA 208,209,169,11,141,32,208,76,166,192,96,162,0,189,4,194
531 DATA 157,64,3,232,224,64,208,245,234,96,234,0,0,0,0,0 0,63,255
532 DATA 252,63,255,252,15,255,252,15,255,252,63,231,252,63,195
533 DATA 252,63,129,252,63,129,252,63,195,252,63,231,252,63,255
534 DATA 252,63,255,252,63,231,252,63,231,252,63,231,252,63,231
535 DATA 252,31,189,248,0,0,0,0,0,0,11,0,234,0,0,0,0,0,0,0,0,0
536 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,31,27,27,27
537 DATA 27,27,27,36,0,67,32,65,66,32,67,32,65,66,32,32,32,32,32
538 DATA 32,32,32,32,32,32,32,32,32,32,32,72,72,72,72 72,8,28,20
539 DATA 1,19,13,1,33,30,0,107,32,65,66,32,107,32,65,66,32,32,32
540 DATA 32,32,32,32,32,32,32,32,32,32,32,32,32,70 20,20,12,70,0
541 DATA 34,29,29,29,29,29,29,35,0,32,32,32,32,32,32,32,32,32,32
542 DATA 32,32,32,32,32,32,32,32 32,32,32,32,32,32,32,112,112,112
543 DATA 112,112,0,28,32,32,32,32,32,32,30,0,32,32,32,32,32,32,32
544 DATA 32,32,32,32,32,65,66,32,67,67,32,32,65,66,32,32,32,32,32
545 DATA 32,32,32,32,0,28,32,4,9,19,11,32,30 0,32 32,32,32,32,32
546 DATA 32,32,32,32,32,32 65,66,32,107,107,32,32,65,66,32,32,32
547 DATA 32,32,32,32,32,67,0,28,32,32,32,32 32,32,30,0,32,32,32
548 DATA 72,72,72,72,72,72,72,32,67,32,72,72,72,72,72,72,72,32,32
549 DATA 32,32,32,32,32,32,32,107,0,28,14,21,13,2,5,18,30,0,32,32
550 DATA 32,70,3,9,1,45,49,70,32,107,32,70,3,9,1,45,50,70,32,67
551 DATA 67,67,32,67,32,32,32,32,0,28,32,32,32,32,32,32,30,0,32
552 DATA 32,32,112,112,112,112,112,112,112,32,32,32,112,112,112
```

Commodore 64

```
553 DATA 112,112,112,112,32,107,107,107,32,107,32,32,32,67,0,28
554 DATA 32,32,48,48,32,32,30,0,32,32,32,32,32,32,32,32,32,32
555 DATA 32,32,32,32,32,32,32,32,32,32,32,32,32,32,67,32,32,32,107
556 DATA 0,34,29,29,29,29,29,29,35,0,32,32,32,32,32,32,32,32,32
557 DATA 32,32,32,32,32,32,32,32,32,32,32,32,68,70,69,32,107,32
558 DATA 32,32,32,0,28,32,32,32,32,32,32,30,0,32,32,32,32,32,32
559 DATA 32,32,32,32,32,32,32,32,32,32,32,32,32,32,32,68,53,69,32
560 DATA 32,32,32,32,67,0,28,5,18,18,15,18,19,30,0,67,32,65,66,32
561 DATA 32,67,32,67,32,67,65,66,32,67,32,65,66,32,32,32,68,53,69
562 DATA 65,66,32,32,32,107,0,28,32,32,32,32,32,32,30,0,107,32,32
563 DATA 65,66,32,107,32,107,32,107,65,66,32,107,68,70,69,32,32
564 DATA 32,68,54,69,65,66,32,32,32,32,0,28,32,32,48,48,32,32,30
565 DATA 0,68,70,69,32,32,32,32,32,32,32,32,32,32,32,32,68,54,69
566 DATA 32,32,32,68,70,69,32,32,32,32,32,67,0,34,29,29,29,29,29
567 DATA 29,35,0,68,19,69,32,32,32,32,32,32,32,32,32,32,65,66,68
568 DATA 53,69,32,32,32,65,66,32,32,67,32,32,32,107,0,28,32,32,32
569 DATA 32,32,32,30,0,68,9,69,32,32,32,32,32,32,32,32,32,32,32
570 DATA 32,68,49,69,32,32,32,32,32,32,32,107,32,32,32,32,0,28,32
571 DATA 32,2,25,32,32,30,0,68,4,69,32,32,32,65,66,32,67,32,32,32
572 DATA 32,32,68,48,69,32,32,32,68,70,69,32,32,32,32,32,67,0,28
573 DATA 32,32,32,32,32,32,30,0,68,70,69,32,32,32,32,32,32,107,32
574 DATA 32,32,32,32,68,70,69,32,32,32,69,20,69,65,66,32,32,32,107
575 DATA 0,28,32,7,1,18,25,32,30,0,32,32,32,32,32,32,72,72,72,72
576 DATA 72,67,32,32,32,32,32,32,32,32,32,68,20,69,32,32,32,32,32
577 DATA 32,32,28,13,1,25,8,5,23,30,0,32,32,32,32,32,32,70,22,9
578 DATA 3,70,107,32,32,32,32,32,32,32,32,32,68,12,69,32,67,32,32
579 DATA 32,32,32,28,32,32,32,32,32,32,30,0,32,32,32,32,32,32,112
580 DATA 112,112,112,112,32,32,32,32,32,32,32,32,32,32,68,70,69
581 DATA 32,107,32,32,32,32,32,28,32,49,57,56,54,32,30,0,0,0,0,0
582 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,34
583 DATA 29,29,29,29,29,29,35,32,32,32,32,32,32,32,32,32,32,32,32
584 DATA 32,32,32,32,32,32,32,32,32,32,32,32,32,32,32,32,32,32,32
585 DATA 32,32,32,32,32,32,32,32,32,28,8,5,32,1,2,6,21,12,32,19
586 DATA 15,6,20,23,1,18,5,32,18,21,14,15,32,1,7,1,9,14,32,33,32
587 DATA 40,20,1,19,18,1,33,41,32,96,32,96,46,111,46,74,46,111,32
588 DATA 96,32,96,32,96,63,96,32,96,132,193,128,129,138,234,2,7
589 DATA 7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7
590 DATA 7,7,7,7,7,7,7,7,7,7,7,7,7,12,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7
591 DATA 7,7,7,7,7,7,7,7,3,3,3,12,12,12,7,12,8,8,8,7,7,7,7,7,7,7,7
592 DATA 7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,3,7,7,7
593 DATA 7,12,8,8,8,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7
594 DATA 7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,8,8,8,7,7,7,7,7,7,7,7,7
595 DATA 7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7
596 DATA 7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7
597 DATA 7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7
598 DATA 7,7,7,7,7,7,0,234,234,255
```

The Rogue Program



GRAPH LISTING

by M Lloyd

Although the Sinclair QL is supplied with Psion's *Easel* there is scope for other types of graph. This series of short listings makes full use of many SuperBasic features to provide three dimensional block graphs complete with scale, annotations and shading. Although very flexible, thanks to structured SuperBasic, the program makes the computer do all the thinking – the programmer need only provide the data, in the form of an array, and set the window size and location.

The essential elements of the program are the first two listings, the second being a slave function of the first. By passing a numerical array to the *cube* procedure a single block graph is drawn in the default window. The *setscale* function contains an intelligent scaling routine and produces the background for the block. The *matrix* procedure displays up to six block graphs from data contained in a two dimensional array. The fourth listing is a a labelling routine and the fifth is a test module which creates its own data and calls the *cube* or *matrix* routine to display it.

Program Notes

Listing 1 After calling the scale setting function this routine draws angled lines representing the front two faces of the cube. Sectors are printed in colours selected according to the current screen mode. A stipple is used to represent shading and the top surface of the cube is added using the *FILL* command.

Listing 2 – This function initially clears the default window and sets the QL's graphics scale. The middle part of the function determines the data scale to be used. The total height of the block is calculated and compared with three options for the maximum value of the background scale. The magnitude of the total block value is taken care of in Line 235. The function then draws and annotates the background lines and returns the block scale value used by the variable *prop*.

Listing 3 – This listing shows how the main routine may be incorporated within a hierarchy of procedures. Up to six blocks are displayed within the normal TV mode screen area. Because the main routine prints within the default window, it is a simple matter to alter the display by amending the window size and location. The comprehensive parameter-passing ability of the QL copes easily with the data arrays. Listing 3 expects a two dimensional array which it splits into the appropriate number of single dimension arrays.

Listing 4 – This routine is subordinate to Listing 1 and can be used to display a description of each sector. If required, the routine could be used without alteration to print the value of each sector instead. Should the option not be wanted, delete the formal parameter *tag* from Line 100 and delete Line 180.

Listing 5 — This is a test module which makes up a two dimensional array of data for display, complete with descriptions for the sectors. As it is shown it calls up the six block display. Remove the *REMark* command from Line 545 and make Line 540 a *REMark* statement and a large, single block will be displayed as demonstrated by the screen dump.

Listing 1

```
100 DEFine PROCedure cube (array,tag)
105 LOCal sum,item,prop,n,colour
110 prop = setscale:sum = 0
115 FOR item = 1 TO DIMN(array)
120 colour = 2+(2*item MOD 6)
125 IF PEEK(163872):colour = 1+(item
MOD 7)
130 FOR n = sum*prop TO (sum+array(it
em))*prop STEP .5
135 INK colour:LINE 40,n TO 70,n-8
140 INK colour,0:LINE TO 100,n
145 NEXT n
150 label tag$
155 sum = sum+array(item)
160 NEXT item
165 INK colour,7,3:FILL 1
170 LINE 40,n TO 70,n+5 TO 100,n
175 LINE TO 70,n-8 TO 40,n:FILL 0
180 END DEFine cube
```

Listing 2

```
200 DEFine FuNction setscale
205 LOCal total,n,ex
210 PAPER 0:INK 4:CLS:SCALE 110,0,-10
215 total = 0
220 FOR n = 1 TO DIMN(array)
225 total = total +array(n)
230 END FOR n
235 ex = INT(LOG10(total))
240 FOR n = 2,5,10
245 IF n*10^ex > total*1.1
250 total = n*10^ex:EXIT n
255 END IF
260 END FOR n
265 FOR n = 0 TO 100 STEP 10
270 LINE 0,n TO 100,n
275 CURSOR#1,0,n,0
280 PRINT total*n/100
285 END FOR n
290 RETurn 100/total
295 END DEFine setscale
```

Listing 3

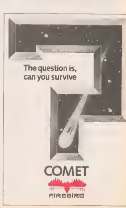
```
300 DEFine PROCedure m_cube (matrix)
310 LOCal set
320 FOR set = 1 TO DIMN(matrix)
330 IF set>6:EXIT set
340 WINDOW 150,120,32+150*((set-1) MO
D 3),16+120*(set>3):BORDER 1,2:CLS
350 cube matrix(set)
360 END FOR set
370 WINDOW 448,200,32,16
380 END DEFine m_cube
```

Listing 4

```
400 DEFine PROCedure label (tag)
410 CURSOR#1,100,n,0:INK colour
420 PRINT tag(item)
430 END DEFine label
```

Listing 5

```
500 REMark      TEST MODULE
510 DIM test(6,6),tag$(6,6):RESTORE
515 FOR x = 1 TO 6
520 READ tag$(x)
525 FOR y = 1 TO 6
530 test(x,y) = RND(40 TO 60)+3*x
535 NEXT y:NEXT x
540        m_cube test
545 REMark cube test(1)
550 DATA  Discs , MDVs , Tapes , ROMs
 , EPROMs , CDROMs
555 REMark   END TEST MODULE
```



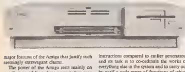
The question is, can you survive
COMET
FIREBIRD



THE SYSTEM

EVERY working computer, no matter how humble, is a complex machine made up of an extraordinary variety of components. What makes a good computer, however, is not complexity but the quality of the components and the effectiveness of the design that ties those components together. On both these counts the Amiga family represents a major step forward in personal computers, offering a level of power and performance simply not seen before in a personal computer. In this article we intend to cast a quick eye over the major features of the Amiga that justify such seemingly extravagant claims.

The power of the Amiga rests mainly on a collection of four chips never before seen in combination — three of them never before seen at all — the Moutrola MC68000 central processor unit, the AGNUS address generator, the DENISE (or DAPHNE) display encoder chip and the PAULA (or PORTIA) ports, audio and UART chip. Based around this central core is 256K of memory used by the system to store the operating system of the Amiga — the form of the memory involved may be specially protected random access memory loaded from disk when the machine is first powered up, or read-only memory chips with the operating system built in, according to the version of the AMIGA. Outside of this the standard Amiga comes equipped with 256K of random access memory available to the user, with the option to expand up to 512K by the simple addition of a cartridge of extra memory, or up to 8 megabytes (8,388,608 bytes) on a special external memory board. This is, of course, far from the end of the story. The full Amiga system is crammed with hi tech components and capable of expansion in a wide variety of ways, according to need.



68000 CPU

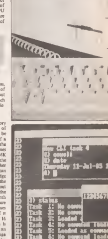
A full description of the Amiga, such as you will find in our book, involves going beyond the individual components to their parts and to the ways in which they work together, since very seldom is any function the sole responsibility of a single chip within the system. Nevertheless, a great deal can be learned about the machine simply by using the four major chips as a guide.

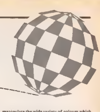
Though much of the work carried out by a CPU on lesser machines is borne by the rest of the hardware on the Amiga, the 68000 is still the heart of the Amiga system, as it is of a great many of the latest generation of sophisticated personal computers. The CPU is the most flexible of the Amiga's hardware in use, accepting a massive range of instructions compared to earlier generations, and its task is to co-ordinate the works of everything else in the system and to carry out by itself a wide range of functions of which other aspects of the system are not capable.

Memory

Around the 68000 is clustered the memory of the machine, consisting of a collection of "dynamic RAM" chips which must be refreshed roughly every 2 thousandths of a second if they are not to lose all record of the data they contain. The basic Amiga comes equipped, as mentioned above, with 256K bytes of memory devoted to the storage of the operating system of the machine and another 256K available to the user. Another 256K can be added in the form of a slot-in cartridge which can be inserted into a port behind the front panel of the machine. The arbitrary limit of 512K thus imposes is nothing to do with the abilities of the 68000 CPU, but rather with the three other specialist chips, which are designed to deal only with memory addresses falling in the first 512K. The 68000 itself is quite capable of dealing with in excess of 16 million bytes of memory and provision is made to use this power by means of an expansion port on the side of the Amiga which, among other functions, allows the system to be made up to a full 8 megabytes.

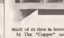
AGNUS, which stands for the "Address Generator Chip", is in many ways the key to the speed of the Amiga in operation. In this single chip are contained three crucial





functions.

a) The controls for the "direct memory access" channels, which allow several different parts of the system to access the memory, without having to ask the CPU to both obtain the data from a specified location and/or place it into a specifield location. The Amiga has an astonishing 25 direct memory access channels devoted to functions like audio, graphics, disk drives and so on, and every one of those channels is directly responsible for relieving the CPU of a task that takes up



much of its time in lesser systems.

b) The "Copper" co-processor, which allows material to be placed on the screen of the Amiga in a manner which is exactly synchronised with the 50/60 per second passages across the screen of the beam of electrons which creates the display. The Copper is an extremely fast device which not only improves the quality of the Amiga's display but once again relieves the CPU of the need to wait for the correct time to place an item on the screen

The blitter

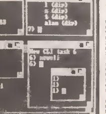
c) The "blitter" — short for "block image transferrer" is a device mainly used for the manipulation of areas of display memory which need to be moved, though it can be and is applied to other purposes within the first 512K of memory which require that blocks of memory be moved around. The point of data from place to place in memory is capable of tying up the CPU for relatively long periods, so that once again the AGNUS chip provides a facility which frees the 68000 for other, more important work that only it can carry out and secondly, within its relatively limited sphere of operations, the blitter is around 10 times as fast as the 68000 itself

DENISE is the display encoder chip, and its basic task is to create the display on the screen of the monitor or television attached to the Amiga. The data on which the Amiga display is based is stored in a complex format which makes it easier to generate and manipulate the wide variety of colours which the system allows. DENISE makes it possible for this complex data to be sent straight out of memory, without having to be heavily processed, and then to be rapidly transformed into a format suitable for the screen — thus again relieving the CPU of a major task which is otherwise constantly going on. The addition to this overall task, DENISE also handles the job of mixing in the images of any sprites, small graphics objects which are capable of being moved around the display rapidly, indepently of anything else. Finally, as if these tasks were not enough, DENISE also carries most of the responsibility for monitoring the mouse port, through which information is received from the mouse device.

The final major custom chip amongst the Amiga's hardware is PAULA, the ports, audio and UART chip. The majority of the chip is devoted to the complex task of handling the Amiga's four separate sound channels, with some help from the AGNUS chip, which places 4 direct memory access channels at the disposal of the audio system. In addition to this, PAULA handles the communication of the system with the disk drives and with the serial port at the rear of the machine.

Faster and better

These then are the major components of the Amiga — in terms of function, if not of size. None of them can be really described as major steps forward in technology. What is special about them is that in the Amiga, for the first time among the new generation of graphics-based personal computers, someone has taken the trouble to sit down and analyse the kind of task which the graphics environment requires and the kind of burdens it places on the system. AGNUS, DENISE and PAULA, though fairly simple devices in themselves are precisely adapted to take over roles from the 68000 CPU and to perform those roles faster and better, leaving the raw power of the 68000 to be used where it is needed most — in running programs ●



FAST GRAPHICS

IN OUR overview of the Amiga we looked at the main features of the Amiga's hardware and noted that while they gave a guide to what makes the machine tick, the only way to really understand it was to look in detail at the individual functions that they performed Nowhere is that more true than in the case of the "blitter", the strange sounding device that forms part of the AGNUS chip described earlier

Hardware

Those who tends to avoid the technicalities of the internal working of new micros should try not to turn off their minds at this point because what follows is not too technical and, to put it bluntly, you cannot really understand the Amiga withough thinking about its hardware If the first impression that people have of the Amiga is one of amazement as the quality of its graphics and the sheer speed at which graphic objects can be moved and manipulated, then that amazement is really a product of the work of the blitter

The name blitter is short for "block image transferrer" and the purpose of the blitter is simply to transfer blocks of data from one place in the first 512K of RAM to another Once again, as with much of the rest of the hardware, this task relieves the 68000 of time consuming chores which would slow down the system but also, in the case of the blitter, the process is actually carried out faster than it would be by the 68000 itself — up to 10 times faster in fact — since the blitter is specifically designed to carry out the task

The act of straightforward data shifting is central to what the blitter does within the Amiga graphics system — though the blitter is not necessarily limited in its application to graphics, it will just as cheerfully shift programs around in memory if necessary Graphics is the major area, however, and here the relevance of the blitter is clear to anyone who has worked for more than a few minutes with an Amiga.

The totally flexible display of the Amiga, with windows appearing and disappearing, shuffling behind one another, moving from one point to another on the screen, is no more nor less than a massive demand for the movement of data in memory Every time a window is shifted from one place to another, for instance

a) the area that it used to occupy has to be reconstituted by bringing the previous contents back from a "memory buffer" in which they have been saved

b) the data from the area which is about to be covered by the window has to be copied from the display memory into a buffer

c) finally the data which represents the contents of the window display has to be copied into the display memory at the correct point

These tasks, though simple, are not small — unless they were carried out at the kind of speed that the blitter can achieve, the Amiga would be almost impossible and certainly unpleasant to use

In order to carry out such a transfer, the blitter needs only to be told where in memory the data to be shifted is, where it is being shifted to and how much there is to copy In addition it needs to be told the size of the lines which make up the image it is copying

For instance it might be being asked to copy a small image 32 pixels across and 20 pixels high from an area of memory which represents a total display 320 pixels across, In order to do this it will need to be able to move to the byte in memory representing the beginning of the rectangle holding the image, pick up the two 16-bit words of data that defin 32 pixels and move them, then skip through the memory to the data representing the second line of pixels in the rectangle This operation it would prrform twenty times and in doing so copy the spcified image, without touching anything around

Pixels

Simply moving data is not the limit of the abilities of the blitter, useful though it may be One of the problems of writing data into a display arises if the image to be placed on the screen is not rectangular, or where the images to be placed on the screen need to be drawn from separate sources In fact that blitter can cope unaided with a wide variety of situations like this because the AGNUS chip provides it with 4 dedicated direct memory access channels

Three of these channels the blitter uses to call up data simultaneously from up to three different sources, while the fourth channel is employed to send the resulting output to the destination in memory In calling up information from more than one source, the blitter is equipped to carry out a variety of what are known as "logical operation" such as AND, OR, INVERT, EXCLUSIVE OR, which allows pixels from one source to take priority over others, to be manipulated, to be combined with others and so on

One frequent use of these abilities is to overcome the fact that the blitter can only move rectangles directly — this raises a



Not a hideous monster in your computer, but an essential part of the Amiga's graphics abilities

problem if, for instance, a multi-coloured circular pattern is to be placed on the screen. What has to be moved is actually a rectangle containing the circle and unwanted parts of the rectangle may obliterate something important and is already displayed. Since the circle is multi-coloured there is no possibility of telling the blitter only to transfer the pixels that are not "background" color.

Patterns

In such cases the ability to combine different sources can be used to make the blitter pick up say, a black copy of the circular pattern from one source. The circular pattern itself is then taken from memory as the second source. Finally the two are combined with the existing screen display (the third source) so that any pixels which fall within the shape defined by the black "mask" are overwritten and any which fall outside the shape defined by the mask are left unchanged. The result is then sent out along the fourth DMA channel and the circular pattern appears on the screen without the least disturbance to anything around it.

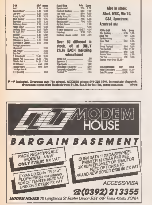
So fast is the blitter at carrying out complex tasks involving placing an image over a background that it can be used to move objects around a display in much the same way as "sprites" on something like the Commodore 64 — independent small images which are not part of the main display and so can be moved rapidly around. In doing this it is aided by another important feature, its ability to move data a certain number of bits to the left or the right before it places them onto the display.

Without this, the smallest movement that could be made of an object would be one complete 16-bit word, the smallest unit with which the Amiga normally deals. With the ability to shift data left or right an object can be made to move pixel by pixel as if it were completely detached from the playfield over which it moves with an action as smooth as a full sprite, though the subject is acutally part of the playfield and cannot move from playfield to playfield. Sprite-like objects whose movement is handled by the blitter are referred to as "bobs" and there is specialist software in the operating system to handle them and to provide them with a variety of sprite-like characteristics such as transparency, collision detection, priority on the screen and so forth.

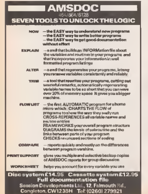
Finally, apart from its role in shifting memory the blitter is also used for two more specialised graphics roles, area filling and line drawing. Filling an area with a color or pattern is a logical extension of its abilities to work with the outline of an object and to fill an area of memory with something.

Line drawing is also provided for in a variety of different modes, solid, textured, inverse video and so on, which is why the Amiga can achieve such speed at the constructions of line drawn items, even to the extent of providing smooth animation of several changing line-drawn shapes on the screen — something not seen before in a micro in anywhere near the Amiga's price range.

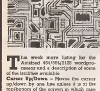
BY THE BLITTER


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ANCIENT & MODERN



WORD PROCESSOR

by Glenn Counsell

This week more listing for the Amstrad 464/664/6128 wordprocessor and a description of some of the facilities available

Cursor Up/Down – Moves the cursor up/down by one line unless it is at the top/bottom of the screen in which case the text scrolls by 10 lines

Shift + Cursor U/D – Moves the cursor to the top/bottom of the screen directly unless it is already there in which case the text scrolls by 50 lines

CTRL + Cursor U/D – Moves the cursor to the top/bottom of the text.

Cursor Left/Right – Moves the cursor one character left/right on the current text line inverting the character under it.

Shift + Cursor L/R – Moves the cursor directly to the left/right of the current text line

ENTER – Moves to a new text line if the cursor is at the end of the text

DEL – Deletes the character immediately to the left of the cursor

CTRL + S – Saves the current text file under a given filename

CTRL + L – Either loads a given file or, if given a numeric text width (4-78 columns), it will set up a new blank file

CTRL + N – Displays the number of lines left for text.

CTRL + F – Searches for the given character set from the current line down. If found it repositions the text with the first incidence of the set at the top of the screen

CTRL + R – Replaces every incidence of the first given character set with the second from the current text line down. If the second character set is too long that replacement is not carried out

Next week more listing and instructions relating to the block manipulation functions. Meanwhile if you feel like a rest from typing, copies of the program can be obtained from G Counsell, 218a Banbury Rd, Oxford for £7 (disc) or £3 (tape). Please state also whether you require the version of the program to work on disc or tape

UNDER THE MORTUARY

by Sunil Jagota

And now ... the end is near, etc. Yes, this week, your final helping of code for our arcade adventure *Under the Mortuary*. After this week, using the Hex loader we printed back in Vol 5 No 6, you will have a block of code, saved under the filename *'Prog'*. This code should be placed on a tape directly after the instruction program.

Best of luck with the game — hope you have as much fun playing it as we did. In any case, if your fingers are already worn to the bone, or maybe you're just feeling plain lazy, copies of the program can be obtained on tape, by sending £4 to the author, Sunil Jagota, at 69 Coutts Rd, Walkergate, Newcastle-upon-Tyne NE6 4RA.



Compilation disc

Regular readers of this column will probably remember a few months ago the letters and confusion over whether the long awaited *Halls of the Things* was to appear on the Amstrad.

The good news, as anyone who went to the recent Amstrad show will know, is that it is now here in the form of a compilation disc from Design Design called *Working Backwards*, £14 95 You may be able to smell the smoke coming off my computer – I was up until two am last night playing the blasted thing (774 points)

The compilation contains all of its Amstrad releases to date, *Dark Star*, *Tank Busters* and *On the Run*, and has the previously unseen *Halls* as a bonus I think I'm right in saying that the other games have only been available on tape up until now, so it looks like a pretty good buy for the 6128 or other disc drive machines

Those with tape machines, or who already have one or two of the programs need not despair – a version of *Halls* has also been promised for the new *Forbidden Planet* follow-up to *Dark Star*

Incidentally, *Halls* also comes with an extra feature – a character editor so you can get your revenge on the Things by making them look even more stupid, if by no other way It's my tip for the best Amstrad compilation. Whilst on the subject another Amstrad game to look for is Gremlin's *Grumpy Gumphrey* – an extremely well implemented cartoon-like game

Now then on with the tips – there's even *more* to be said about *Elite*! Alan Jones of Basingstoke has found a rather helpful bug in the Spectrum version, for those who can't dock or who can't get past the attacking ships on the way to the station.

"First you must be in a space station (say, Lave) Buy all the equipment you want as normal and set your hyperspace coordinates to the planet you want to go to (say, Leesti)

"Leave the station and turn your spaceship around at minimum speed until you are facing the station. Start to enter it at maximum speed About two to your hyperspace countdown will commence, when the break pattern appears the countdown continues When you have docked you will be in Leesti's space station.

"It also works with the galactic hyperspace system "

Thanks for that marvellous tip Alex. You should have seen the *Gunfright* pokes in an earlier issue of the magazine but luckily we have had some more from that notorious trio (sorry about saying that there were only two of you), the Langley Hackers

Enter this

```
10 LOAD "" CODE. LOAD "" CODE. POKE
23457,201 PRINT USR 23424 STOP
20 LOAD "" CODE LOAD "" CODE PRINT USR
24064
```

Run this and play the tape When the stop statement appears stop the tape and type in.

```
POKE 53012,201  POKE 48940,N N = LIVES
POKE 49290 0  POKE 53912 201 INFINITE LIVES
POKE 46022 0 NO WOMEN
POKE 54134 0 NO FINES
POKE 48224 0 OUTLAWS CAN T DRAW
POKE 51714,201 INFINITE BULLETS
```

Finally Alex, and all the others who have written in to ask I'm sorry but the first *Arcade Addicts' Handbook* was a limited print run that has completely sold out

It is extremely unlikely that they will be printed again so you will not be able to buy any from us – try the Computer Swap pages

I was intrigued to see a letter from Mirrorsoft, consisting of the "first of a series of tips for the frustrated pilots of *Strike Force Harrier* who are unable to locate and destroy the enemy HQ" Well here they are

"To survive for any length of time you must look after your landing sites The rules are simple but easy to forget if you have three MiGs on your tail.

"If a tank moves in on a landing site it is destroyed (you will hear an explosion if the sound is on) A new landing site then becomes available at Home Base where the Q landing site starts off.

"If a tank moves to Home Base then the game will end and you will get the red screen (This will stay there until you play dead – ie, take your fingers off the keyboard)

"You are particularly vulnerable when a landing site is destroyed and you get a new one at Home Base

"Tanks are targetted to the landing sites so with one at the Base your Achilles heel is exposed.

"The tips are: as soon as you are airborne go and destroy the four tanks to the east of landing site Q Move your landing sites every 15 minutes or so," Sounds exciting, and there is *more* promised!

It doesn't look like we are going to have room for the *Dragontorc* guide this week so let's finish with some pleas for help

Shelley Baron of Bushey Heath has written in for help with the AnF game *Chuckie Egg 2* for her Commodore 64 "Can you please let me know what the trick is in taking the basket to hold the milk in?

"I have tried all manner of methods, sane and insane, to keep hold of this object without getting killed. I tried phoning AnF but found it has gone out of business

"I then carried on through various levels until reaching a one way system at about level 30 – can anyone help me with this?

Finally I have reached this level without seeing any sign of sugar and gifts as mentioned in the instructions "

You have obviously missed it, Shelley, but in our back issues you will find that we have quite a number of hasted letters asking what to do with the baskets To the best of my knowledge everyone has the same problem! We eventually came to the conclusion that it was a bug or a trap with no real solution, but if anyone knows better, or has answers to the other problems, please write and help Shelley and all the rest

Finally Lee Mogford of Filsey wants to know the start addresses of the code in the CBM games *Matrix*, *Hovver Bovver* and *Ghostbusters*.

Tony Kendle

Tony Bridge's Adventure Corner



Ten collection

Central Solutions of London has recently released a vast amount of budget arcade games and adventures I haven't seen any of the individual programs, which retail at just £1 99 for single games and £2 99 for the double packs, but I have managed to take a look at the 10 Adventure pack, which is yours for a lot less than half the price of many a total disaster, just £5 95 I believe that I detect the hand of Gilsoft behind this project – either Central Solutions is their own mark, or else they have off-loaded a number of the unsuccessful submissions but anyway some of the adventures still retain their Gilsoft title screens

A Tangled Tale is first, and for my money, the best adventure on the tape Like the rest it's *Quill*'d but author Dave Watson has used it in a very original way The title screen is a beautiful rendition of one of Lewis Carroll's Alice illustrations, and a preamble tells the player that the game is based on Carroll's *Tangled Tales* as well as his other works As you start the game, you find that you have a piece of string in which is tied ten knots The object of the adventure is to untie the knots, which can only be done by answering a number of riddles set by five characters – they'll all be well-known to you – The White Rabbit, Mad Hatter, Caterpillar, Humpty Dumpty and The White Knight

Once this is done, you must then find and rescue Alice (only when you have unravelled all the knots) and help her reach a certain location to be Queen'd. There are very few locations (illustrated in block, though attractive and colourful, characters) and very few of the usual adventure problems (the Vorpal Sword and what you do with it – slaying the Jabberwock – is there "simply for those who demand gratuitous violence in their games"!) the main occupation in this adventure is the riddle-solving Typical of these is this one, which unravels the second knot "Write 1000 down quite plain then half of 2 and add again 50 and one's final letter – run or walk, whichever's better"

It's a lovely program, well-implemented (though the author – maybe deliberately? – has an almost consistent aversion to using the capital 'I', as well as a highly-developed 'alternative' vocabulary) and attractively presented, and I'm glad to see it available

The others on the tape are not of the same quality, though the avid adventurer will find plenty here to amuse, from easy to hard They are all *Quill*'d and all of standard layout, with the usual spelling and grammar mistakes and all seem to be in their original form, with no attempt by Central Solutions to present a uniform appearance – some have loading screens, others go straight in to terse descriptions with no attempt at atmosphere-setting

Jason and The Fleece casts you in the role of Jason, and I imagine your task is to find and equip the Argo and set sail to find the Golden Fleece It's a big adventure, with little graphics depicting many of the objects, the game-play is in the classic style and there is plenty of combat (and like Dave Watson, the author seems to have an aversion to the upper-case I) Anyone who has seen the film *Jason and The Argonauts* will know what to expect (and author Adrian Seymour manages a couple of nice plugs for Gilsoft along the way)

Hunt through space

Crystal Quest by Malin and Jones is a hunt through space for certain crystals which, when returned to Earth, will save the populance from the ravages of the plague *Sea of Zirun* from Dave Walls (who is man enough to provide his home address to those who want Help) takes place, surprise, beneath the eponymous sea. Finding yourself trapped in an underworld kingdom, you must obtain certain items and then return to your own world There is quite a bit of exploring to do, with the occasional underwater cave which might hold treasure or monsters, and the puzzles are not too taxing Responses are amusing and the adventure rips along.

Dragon Slayer, from the Quill of Steven Pilgrim, kept me engrossed for some time Despite the odd sloppiness in layout and so on, the initial premise, the solving of three quests, though a little unoriginal, proved quite entertaining, and the associated puzzles elegant in their logicality Edward Beck contributes *Eye of Vartan*, which appears to be set in a prehistoric age, with you cast as a caveman You must find The Eye of Vartan (again, a device that will save the world from the dreaded Plague – or *Quill*'d adventures about dreaded Plagues?) by entering into yourself, whatever that might mean – along the way, you'll indulge in a bit of monster-slaying, a touch of magic here and there, and Troll and Cyclop-bashing You can also rescue a Princess and read some runes Again, this was quite diverting, being a not over-difficult romp through an imaginary world

Behind enemy lines

Rifts of Time, from the same author as *Zirun*, features a Thorin-like character named Dave-with-the-pointy-ears, who sits around scratching his armpit and making random suggestions of a distinctly unhelpful nature Your mission is to return three relics of great power, the Golden Sword of Tyr, the lost Helm of Vidar and the Horn named Gjaller Quite amusing and colourful, though not always properly debugged *Commando*, from P Robinson, the author of the lost *Time Quest*, concerns your exploits as a commando charged with returning a list of enemy agents from behind enemy lines

The final adventure on the tape is *The Hexagonal Museum* by J Devlin and T Skidmore Once you have managed to get past the security devices guarding the museum (and you'll need at least some of the ten objects from the starting location, but you can only carry five), you can wander around the many galleries, each of which contains a valuable collection

The excitement in this adventure comes from the limited number of moves you are given at each point to escape the guards The author has an extremely idiosyncratic view of spelling and grammar which makes the game even more diverting than it might be otherwise

Time Quest was unfortunately not present on my tape despite being advertised on the artwork – that's a pity, as one or two people have asked me for more information about this adventure

This is a good collection – nothing too difficult, yet most of the games will keep the adventurer busy for several sessions Although software prices are a little too high at the moment, nevertheless the price of this package is sensible and a worthwhile investment Next week, a couple more collections to think about. Central Solutions, 500 Chesham House, 150 Regent Street, London W1R 5FA.

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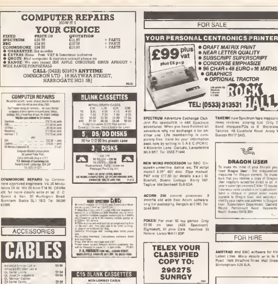
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Erik the Viking and Valkyrie 17 on Spectrum. Has anybody got maps for these two? Also I would love some help with Valkyrie 17 Paul McLean, 148 Mortimer Road, South Shields Tyne and Wear

Lords of Time on BBC B Can't get into shed even with lodestone and can t get beyond wall of ice. Mrs heather Mitchell 215/3 Causewayside, Edinburgh, Scotland

Snowball on Amstrad Where is the spacesuit? What do you do with the woman in the coffin and the revival machine? Jason Powers The Gate House 88 Old Convent, Moat Road East Grinstead Sussex PS Can offer help in Erik the Viking Return to Eden Any Interceptor Fantasia Diamond Lords of Time up to Zone 2

Castle of Terror on C84 How many locations? How do I cross pit? How do I reach boat? Derek Taylor 21 Lansdowne Avenue South Kirkby, Pontefract West Yorks.

Zork III on C64 I can't open the box imbedded in the wall. Olafur Gardarsson Vesterberg 20, 111 Reykavik, Iceland.

Espionage Island on Spectrum. Stuck on Swamp so any advice welcome Ian Boulton 7 Courtney Way, Kingswood, Bristol BS15 2RX

Mordons Quest on Commodore 64 I cannot get past the Pygmy or the plant in the swamp on the first Quest

Mordon's Quest on Amstrad. Problem as above Nicholas Johnson, 17 Shelbury Road, East Dulwich, London SE22

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2	(5)	Formula One Simulator *(Various)*	Mastertronic
3	(1)	Kung Fu Master *(C64)*	US Gold
4	(6)	Hypersports *(Various)*	Imagine
5	(7)	Movie *(Spectrum)*	Imagine
6	(2)	Elite *(Spectrum/C64/BBC/Amstrad)*	Acornsoft
7	(–)	Lord of the Rings *(Spectrum/C64/Amstrad)*	Melbourne House
8	(3)	Eidolon *(C64/Atari)*	Activision
9	(–)	Computer Hits 10 *(Various)*	Beau Jolly
10	(10)	Winter Games *(Spectrum/C64/Amstrad)*	Epyx/US Gold
11	(12)	Finders Keepers *(Various)*	Mastertronic
12	(15)	BMX Racers *(Spectrum/C16/C64)*	Mastertronic
13	(14)	Commando *(Spectrum/C64)*	Elite
14	(17)	They Sold A Million *(Spectrum/C64/Amstrad)*	Hit Squad
15	(16)	Spellbound *(Spectrum/Amstrad)*	Mastertronic
16	(9)	Rock 'n' Wrestle *(C64)*	Melbourne House
17	(–)	Caves of Doom *(Spectrum/C64/Amstrad)*	Mastertronic
18	(11)	Action Biker *(Spectrum/C64/Atari/C16)*	Mastertronic
19	(20)	Vegas Jackpot *(Various)*	Mastertronic
20	(13)	Big Mac *(C64/C16)*	Mastertronic

Figures compiled by Gallup/Microscope

Readers' Chart No 62

1	(1)	Commando *(Spectrum/C64/C16)*	Elite
2	(2)	Elite *(Spectrum/C64/BBC)*	Firebird/Acornsoft
3	(4)	Lord of the Rings *(Spectrum/Amstrad)*	Melbourne House
4	(–)	Yie Ar Kung Fu *(Spectrum/C64/Amstrad/BBC/MSX)*	Imagine
5	(3)	Winter Games *(Spectrum/C64)*	Epyx/US Gold
6	(9)	Saboteur *(Spectrum)*	Mastertronic
7	(7)	Way of the Exploding Fist (various)	Melbourne House
8	(5)	Rambo *(Spectrum/C64)*	Ocean
9	(–)	Spellbound *(Spectrum)*	Mastertronic
10	(6)	They Sold a Million *(Spectrum/C64)*	Various

Winning Phrase No 63. "Wogan – tele made monster", from D W Gray of Shipley in West Yorks, who wins £25. An honourable mention goes to Alastair Bishop of Argyll, for "Wanted – more ammo in Elite"

Now voting on week 65– £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 65 closes at 2pm on Wednesday March 5, 1986 Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name ....

Address ....

....

....

My top 3: Voting Week 65

1. ....
2. ....
3. ....

My phrase is: ....

New Releases

IMPROVED

A company quick off the mark with Spectrum 128K software in the shops is CRL, with the 128K version of *The Rocky Horror Show* Little point in re-reviewing a game that's been out for a while and is essentially unchanged, but it's worth pointing out a few features of this new version

The important thing is that the sound is vastly improved, using as it does, the brand new (well terribly old and outdated actually) Ay sound chip The sound is particularly important in a game which is based on a musical (of sorts)

Best of all is the Time Warp – the song which features at the beginning of the game At last a true three channels and sound voices that don't sound like chain saws! It makes a surprising amount of difference. Apart from the sound there are a few new rooms in this version, but the plot – collect the demedusa spell, avoid weird people and don't lose your clothes – remains its barmy self Given the rush job to get conversions out for the 128, this is a good effort

Program *The Rocky Horror Show*
Price *£8 95*
Micro *Spectrum 128*
Supplier *CRL*
CRL House
8 Kings Yard
Carpenters Road
London E15 2HD

TACTICS

Can anything ever hope to compete with the immortal *Football Manager*? The answer is possibly no, since *FA Cup Football* by Virgin Games tries hard, but ultimately fails to recreate the level of excitement and adrenalin raised by that venerable original

Not that *FA Cup Football* doesn't have its good points For one thing it's extremely detailed and accurately based on real performance statistics It is a different sort of game to *Football Manager*, for one thing you have to manage ten separate teams, for another the actual history of the teams is all important – you need to be a footballing buff to begin with to really get much out of the game

You must guide your teams through the various roughs of the FA cup – your control is limited, shrewd tactics must be mixed with a sure knowledge of the playing style of opposing teams You can con-

Pick of the week

ENTERTAINING





It's always good to see a program that's a little out of the ordinary and *Cad 64* is just that. Certainly interesting and educational, maybe useful, this package gives you some of the facilities found in 'real' computer aided design tools and allows you to draw shapes in 3D and view them from whichever angle you wish.

Cad 64 is not totally novel, it offers rather similar features (though much extended) to a package much venerated on the Spectrum – *VU 3D* (If you ever see that sitting in the bargain bucket for 50p snap it up.) *Cad 64* is, to begin with, a simple but very neat screen design program, with rubber banding, circles, squares and the rest.

The point is, however, that what you draw is a series of cross sections – slices through an object which define its three dimensional shape Having described the shape in terms of a series of cross sections, the computer then puts the elements together and voila – the complete object.

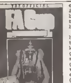
Having designed the object you can then view it from different angles, give it some sort of texture by filling it in with a sort of dot shading Finally, you can animate the object, determining a start and finish angle and a number of frames. It has to be said that with all but the most complex objects this process is incredibly slow, nevertheless there is a certain zen-like fascination in watching it happen

Fairly expensive, but extremely worthwhile – one of the most entertaining 'serious' utilities I've seen in ages.

Program *Cad 64*
Price *£14 95*
Micro *Commodore 64*
Supplier *Orpheus*
The Smithy
Unit 1
Church Farm
Hatley St George
Nr Sandy
Beds SG19 3HP

This Week

Program	Type	Micro	Price	Supplier
Boise of the Planets	Arc	Amstrad	£5 95	Mikro-Gen
Contraption	Arc	Amstrad	£9 95	Audiogenic
F A. Cup Football	S	Amstrad	£7 95	Virgin Games
Team Mate	Ut	Atari	£34 95	Team Mate Software
Utilities	Ut	Atari 520ST	£39 95	Microdeal
One Man and his Droid	Arc	Atari 800	£1 95	Mastertronic
Disc Help	Ut	Atari ST	£29 95	Microdeal
M Copy	Ut	Atari ST	£49.95	Microdeal
The Golden Maze	Ad	BBC B	£5 00	Vannin
Laser Attack	Arc	BBC B	£5 00	Vannin
Racecount	Ed	BBC B	£5 00	Vannin
Spider Spell	Ed	BBC B	£5 00	Vannin
The Facts of Europe	Ed	BBC B	£5 00	Vannin
Double Turn	S	BBC B	£5 90	Vannin
Southern Belle	S	BBC B	£7.95	Hewson
Mr Puniverse	Arc	Commodore 16	£1 95	Mastertronic
Wordrider	Ed	Commodore 64	£12 95	US Gold
F.A. Cup Football	S	Commodore 64	£7 95	Virgin Games
Starship Andromeda	S	Commodore 64	£12 95	Ariolasoft
The Force	S	Commodore 64	£9 95	Argus Press
CAD 64	Ut	Commodore 64	£18 95	Orpheus
Team Mate	Ut	Commodore 64	£34 95	Team Mate Software
Mr Puniverse	Arc	Commodore Plus4	£1 95	Mastertronic
Frak	Arc	Electron	£7.50	Aardvark
Southern Belle	S	Electron	£7.95	Hewson
QL Paragon	Ut	QL	£19.95	Eigen Software
QL Windows/Icons/Fonts			£9 95	Eigen Software
F A. Cup Football	S	Spectrum	£7.95	Virgin Games



trol the structure of your team (attacking, defensive or balanced) and in later stages of the game there is an option to bring on a substitute That's more or less it so far as your involvement goes.

It's a curious game really, perhaps barely a game at all. Those who are very literate in footballing history may find much to entertain them, the less committed probably won't rate the game at all

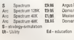
Program *FA Cup Football*
Price *£7 95*
Micro *Amstrad*
Supplier *Virgin Games*
2-4 Vernon Yard
Portobello Road
London W11 2DX

COMPLEX

Starship Andromeda from Ariolasoft is a strange sort of game, sort of strategy, sort of arcade – it isn't quite either Mostly it's several games in one, though unlike the recent *Superman* bodge job the link between the different sections is achieved considerably more smoothly here

It's a space game, obviously and though there is relatively little blasting, there is lots of zooming through the galaxies and floating through space The objective of the game is to grasp a crystal which hangs around the neck of an evil tyrant named Alana (yes a woman evil tyrant!). Getting the crystal involves exploring the galaxy (boldly going or otherwise) finding a Proton lance plus the two elements that power it, then pushing Alana into a corner by taking control of her starbases Finally grab the crystal and use it to reprogram the Mindlord computer which is well dead nasty

Despite an enormously complex plot, controls have been kept down to (more or less) joystick and half a dozen key presses Solving the game means landing on planets searching other spaceships and solving vaguely mastermind-like puzzles There is plenty of skilled joystick jiggling stuff as well, including some particularly effective sequences where you try to get your spaceman aboard another ship



Don't be mislead, *Starship Andromeda* isn't like *Elite* It is essentially a series of games of quite different sorts joined together That said, they are very well joined together and the detailed graphics and neat plot help the whole thing hang together. I liked it.

Program *Starship Andromeda*
Price *£12 95*
Micro *Commodore 64*
Supplier *Ariolasoft*
Asphalte House
Palace Street
London SW1E 5HS

BEEFED-UP

Speaking purely from a technical point of view, the 3D vector graphics in *Battle of the Planets* (Amstrad version) are considerably better than those in *Elite* (Amstrad version) This fact is all the more remarkable because the game hasn't been widely publicised.

In fact, in a curious way the only thing that may prevent the game becoming a post-*Elite* space mega success is the fact that it's tied in with kids cartoon program (same title) and some of the excellent displays, etc, look cartoon-like rather than awesome hi-tech (which is what the older kids want)

Imagine *Elite* style graphics, faster and smoother, add a planet based section where, a little like *Battlezone*, you blow up vector tanks and collect supplies There are hyperspace gates to fly through (large spinning flattened wheel shapes) and strategies to be learnt The nominal plot is to prevent the complete destruction of your planet but the point really is to blast and blast and blast .

If the idea of *Elite* without the trading, with beefed up graphics appeals to you and your macho credibility can put up with a spin off from a kids cartoon then *Battle of the Planets* is the game for you

Program *Battle of the Planets*
Price *£9 95*
Micro *Amstrad*
Supplier *Mikro-Gen*
Unit 15
Western Centre
Bracknell
Berks

This Week

The Force	S	Spectrum	£9.95	Argus Press
Gladiator	Arc	Spectrum 128K	£9.95	Domark
Devils Crown	Arc	Spectrum 48K	£1.99	Mastertronic
Friday the 13th	Arc	Spectrum 48K	£8.95	Domark

Key: Ad – adventure; Arc – arcade; S – strategy-simulation; Ut – Utility; Ed – education

Aardvark, 100 Ardleigh Green Road Hornchurch, Essex RM11 2LG (04024) 41918 **Argus Press**, Liberty House 222 Regent St, London W1R 7DB, 01-439 0666 **Ariolasoft**, Retail **Audiogenic**, 39 Sutton Industrial Park London Road, Reading, Berks 1AZ, 0734 664646 **Domark**, 204 Worple Road London SW20 8PN 01-947 5624 **Elgen Software**, 45 Bancroft Road, Widnes, Cheshire WA8 0LR, 051-423 6201 **Hewson**, 7 Grahame Close, Blewbury, Oxon OX11 9QE, 0235 832939 **Mastertronic**, 8-10 Paul Street, London W1r 7DB **Microdeal**, 41 Truro Road, St Austell, Cornwall PL25 5JE 0726 73456 **Mikro-Gen**, 44 The Broadway, Bracknell Herts 0344 427317 **Team Mate Software**, Debden Green Saffron Walden Essex CB11 3LX 0371 830848 **US Gold**, Unit 10, The Parkway Ind Centre Heneage Street Birmingham B7 4LY 021 359 3020 **Vannin**, 133 Boroughbridge Road York YO2 6AA



Computer literate

In the mid-20s and 30s it was fashionable for adventure novels to have scenes set on board aircraft aircraft were the glamorous face of technology an exciting setting for crime and violence. In the 60s and 70s an occasional adventure novel would have a scene set in space, although films pushed this tendency much further

In the 80s computers have become glamorous, and many modern adventure stories feature scenes in which the heroes must use them. This causes two important problems firstly many writers aren't computer literate, and it's easy to make a mistake which an informed reader will spot. Secondly computers are n't particularly exciting watching someone punching keys is inherently dull.

There are several ways to handle these problems.

1 Baffle the reader with jargon, and hope that you won't have to explain it For this technique it s advisable to hire an expert to tell you what the character should do
2 Put the computer in the enemy's camp so that you can throw in a gun battle if things start to get boring
3 Use what you know then bluff like crazy
4 (Very rarely used) Stick to what you know, and don t try to get too complicated.

For an example of technique 1, see Craig Thomas's recent novel *The Bear's Tears*. On page 374 we find a passage reading " . *what I think he's done, from your description, is add a patch to the compiler which translates the password routine in the database management system. This would have the effect of adding an extra line to the normal password routine in the machine code version* " Thomas has used (and acknowledges) a computer professional s technical advice Despite this or perhaps because of it, the scenes in which characters are talking about computers are the dullest part of the book unless you happen to be a database freak or a rabid hacker

Thomas also uses technique 2 as does John Gardner, author of several post Fleming James Bond novels. *Role of Honour*, Gardner s latest attempt to bring Bond into the 1980 s, puts him against an evil computer genius Unlike Thomas, Gardner doesn't seem to have bothered with experts and the description of the way Bond is turned into a programming ace is an interesting example of technique 3 Since most home computer books assume that programmers will begin by learning Basic, then graduate to more advanced techniques, this is the route Bond follows Unfortunately he is trying to pretend that he was trained on the largest government computers Most readers will be aware of the fact that most mainframes tend to use Cobol.

There are many other flaws, including a splendidly silly mad scientist who's spent years developing his own super-computer independently of the work anyone else is doing, but can still use it to break into any sort of system.

The only example of technique 4 I could find occurs in Gavin Lyall s *The Crocus List*. Lyall has probably played with home computers, and is aware of their limitations The hero knows virtually nothing about them, when he finds a suspicious tape which is evidently computer software, he gets his son to help him find out which machine it runs on, then buys one as an early Christmas present.

In the event the tape proves to have a deadly use, as a simple simulator for a terrorist s weapons Lyall makes no attempt to describe the programming involved (though I suspect that it wouldn t be more than 8-10K of Basic), and the computer isn't the main focus of the adventure

Anyone who guesses that I prefer the Lyall novel is, of course, right. I don t think that anyone would expect a novelist to explain how a car, an aircraft, or a camera works, in any but broadest terms, but there's something about computers this brings out the worst in authors

Marcus L Rowland

Puzzle No 167

In the palace of King Abdul of Marzipan stands a solid sphere cast from pure gold, and measuring as many nubits in diameter as the king is years of age (The nubit is a Marzipanian unit of length)

By order of the King this sphere is to be melted down and recast into four smaller spheres, but the King requires each of the smaller spheres to also be an exact number of nubits in diameter Needless to say all of the gold must be used up, and none of the smaller spheres are to be the same size!

There are no less than four different ways that the task can be done, however, the king has requested that it be done so that the difference between the smallest and largest spheres is kept to a minimum.

What is the smallest size that the present gold sphere can be, and into which sized spheres will it be cast? (Hint: There is no need to use PI or complicated volume formulae if it is remembered that the ratio of the volumes is proportional to the cubes of their diameters)

Solution to Puzzle No 162

There are just two ways to solve the problem. 123 + 4 — 5 + 67 — 89 = 100 and 123 + 45 — 67 + 8 — 9 = 100

```
10 Z$="123456789"
20 FOR A=1 TO 5
30 FOR B=A+1 TO 6
40 FOR C=B+1 TO 7
50 FOR D=C+1 TO 8
60 A$=LEFT$(Z$,A)
70 B$=MID$(Z$,A+1,B-A)
80 C$=MID$(Z$,B+1,C-B)
90 D$=MID$(Z$,C+1,D-C)
100 E$=MID$(Z$,D+1)
[illegible]
```

The program uses four *For/Next* loops to determine the positions at which the signs are to be inserted As the row of digits "123456789" is held in string Z$/ this string can be sliced into five component parts, A$/ B$/, C$/, D$/, and E$/

Winner of Puzzle No 163

The winner is C Lee of Peel Hall, Manchester, who will be receiving £10

Rules

The closing date for Puzzle 167 is March 20



The Hackers





